

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

ORDER NO. 88-045

AN ORDER AMENDING ORDER NO. 84-90

SITE CLEANUP REQUIREMENTS FOR:

INTERNATIONAL BUSINESS MACHINES
SAN JOSE
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board), finds that:

1. On December 18, 1984, the Board adopted Order No. 84-90 prescribing site cleanup requirements for International Business Machines, (hereinafter referred to as the discharger).
2. The State Water Resources Control Board adopted Order No. WQ 86-8 which clarified Order No. 84-90 and responded to appeals of Order No. 84-90.
3. The discharger has been extracting groundwater from the Santa Teresa Basin since 1982 as part of an interim remediation program described in Order No. 84-90. The extraction rate from 1982 to 1984 had been on the average up to 5,500 acre feet annually and from 1984 to present up to 10,400 acre feet annually. Additionally, sixty-five underground tanks were removed or replaced with above ground storage tanks having double containment on the site and more than 23,000 cubic yards of soil have been removed from source areas on site. Currently, the discharger operates thirteen extraction wells which provide significant containment of the plume of pollutants.
4. Operation of the extraction wells has minimized further pollutant migration, slightly reduced the size of the plume and reduced pollutant concentrations within the plume. As a result of interim cleanup, groundwater in the private water supply well which contained the highest levels of volatile organic chemicals (430 ppb Freon 113 and 140 ppb TCA, in 1983) has been remediated to low levels (about 20 ppb Freon 113 and 7.4 ppb TCA, currently). The highest concentrations of pollutants now found in 29 drinking water wells are less than 2.5 ppb of each, Freon 113 and TCA; of those wells, nineteen have nondetectable concentrations at 1 ppb detection limits. The plume is currently being contained by the hydraulic control provided by the groundwater extraction.

5. The discharger's consultant concluded in 1985 that there was a deficit of between 20,100 and 36,100 acre feet per year in the amount of water flowing into the Santa Teresa Basin versus the amount leaving. This deficit has resulted in water being removed from storage which has led to declines in groundwater levels and decreases in potentiometric head. Between 1984 and 1988 the water levels have declined as much as 29 feet near the Edenvale Gap. While the biggest factor contributing to the declines has been groundwater being extracted for groundwater cleanup, other contributing factors include last year's low rainfall, reduced active recharge efficiency, and groundwater extraction for water supply purposes.
6. The discharger submitted a comprehensive plan as required by Board Order 84-90 and State Board Order WQ 86-8. This comprehensive plan contains a proposed final remediation plan, proposed remediation levels, a remediation alternatives evaluation, water conservation plan, and a public health evaluation. The proposed final remediation plan will be submitted by May 1, 1988 and considered in about six months from adoption of this Order. A short remediation term plan is necessary to accomodate changing water conditions as addressed in this Order.
7. In response to the declining water levels, the discharger has been modifying extraction well pumps and pump intake depths in order to continue pumping. Pumps in seven of the extraction wells are already at their lowest point and cannot be lowered further.
8. Based on 1983-85 hydrologic conditions, the discharger has projected that during 1988 and 1989, water level declines may be as much as twelve feet per year. If water levels continue to decline, some of the extraction wells for interim remediation will become inoperable within the year due to the unavailability of groundwater. As a result of this dewatering, pollutants will remain on the dewatered aquifer soils. This would delay remediation of the pollutants. Also, as the water levels recover, pollutant migration becomes difficult to control and to confirm. Dewatering of the shallow aquifers should be prevented to be assured of maintaining control of significant pollutant concentrations. The most direct and rapid method of assuring sufficient groundwater levels to continue effective remediation and control of the plume of polluted groundwater is to reduce the amount of groundwater being extracted in the Santa Teresa Basin.
9. The Santa Clara Valley Water District (hereinafter called the Water District) is also concerned that declining water levels will adversely affect the overall water supply in the basin. The Water District has coordinated a Santa Teresa Basin Management Task Force consisting of all the major groundwater users in the basin. The discharger participated in this Task Force. In conjunction with the Task Force, the Water District developed a Santa Teresa Basin Management Plan in January 1988, that has a goal of reducing basin wide overdraft by about 9500 acre feet per year during the next few water critical years by a combination of additional Water District recharge and significant reduction in extraction by the discharger and other groundwater users.

10. In order to help achieve the reduction in extraction needed, the discharger submitted a "Groundwater Remediation Plan" dated January 18, 1988. Implementation of this short term remediation plan would reduce by 73 percent the amount of water currently being extracted. No change in the rate of groundwater extraction from the A aquifer is proposed. Implementation of this short term plan requires amendment of Order No. 84-90.
11. Implementation of the discharger's short term plan is predicted to result in low concentrations of pollutants flowing past the modified boundary extraction well system and past the extraction well system near Edenvale Gap. At most, 10 ug/l of 1,1,1-trichloroethane [which is 5 percent of the Department of Health Service's action level (SAL) and which is also 5 percent of the Safe Drinking Water Act's maximum contaminant level goal (MCLG)], 10 ug/l of Freon 113 (which is less than 0.1 percent of the Department of Health Service's action level), and up to 0.5 ppb 1,1-DCE (which is less than 8.3% of the Department of Health Services' action level) may migrate into the Edenvale Gap. Because of dilution which will occur in the Edenvale Gap and in the Undefined Area of the San Jose Plain, water supply wells located in this downgradient area will not be significantly affected by this small decrease in the containment of the plume. As it pertains to implementation of the short term remediation plan, compliance with Specifications B.1., B.2., B.3., and B.4 in this Order shall be determined at any one well within the set of monitoring wells, not located near Edenvale Gap, 47-D, 9-D, 9-MD-186, 1-DU, 1-DL, in the D, E, and deeper aquifers, and within the set of monitoring wells near the Edenvale Gap 35-BC, 36-BC, 37-BC, 38-BC, 39-BC, 40-BC, and 44-BC and extraction well ORBC-2, downgradient of ORBC-3 and monitoring wells 32-B, 32-C, 33-BC, 34-BC, upgradient of ORBC-3 which had been monitoring the effectiveness of the current pumping to intercept the plume near Edenvale Gap. Provision 12, Task C.12.1) requests a proposal to revise the current monitoring schedule to include more frequent monitoring of these monitoring wells.
12. This short term remediation plan is consistent with State Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in the State of California." The short term remediation plan does allow limited degradation of the quality of groundwater in the Edenvale Gap area and the Undefined Area. This degradation results from the need to regulate water levels in order to continue remediation. The degradation will not affect beneficial uses, is consistent with maximum benefit to the People of the State by conserving groundwater meeting SAL's and MCLG's, and does not prevent implementation of a final remediation plan.
13. This action is an order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of CEQA pursuant to Section 15321 of the Resources Agency Guidelines.
14. The Board has notified the discharger and all interested agencies and persons of its intent under California Water Code Section 13304 to amend Order 84-90 and prescribe Site Cleanup Requirements for the discharges and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

15. The Board, at a public meeting, heard and considered all comments pertaining to these discharges.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code that the discharger shall cleanup and abate the effects described in the above findings and that this Board's Order No. 84-90 is amended to read as follows:

A. Findings 10.A.1, 10.B.1, and 10.C.1 are revised as follows:

"A. On-site

1. The prevention of significant pollutant migration off the plant site will be achieved by the operation of selected extraction wells as proposed by the discharger's 'Groundwater Remediation Plan'."

"B. Off-site/Defined Plume Area

1. The prevention of significant pollutant migration from this area will be achieved by the operation of selected extraction wells as proposed by the discharger's 'Groundwater Remediation Plan'."

"C. Off-site/Undefined Plume Area

1. The prevention of significant pollutant migration into this area will be achieved by the operation of the extraction system as described in the discharger's 'Groundwater Remediation Plan'."

B. Specifications 1., 2., and 3. are revised and amended as follows:

- "1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited."
- "2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited. Significant migration at the Edenvale Gap means concentrations which exceed 10 ppb TCA, 10 ppb Freon-113, and 0.5 ppb 1,1-DCE as described in Finding 11 of this amended Order."
- "3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited."
- "4. Compliance with Specification 2, as it pertains to implementation of the short term remediation plan, shall be determined at any one well within the set of monitoring wells, not located near Edenvale Gap, 47-D, 9-D, 9-MD-186, 1-DU, 1-DL, in the D, E, and deeper aquifers, and within the set of monitoring wells near the Edenvale Gap 35-BC, 36-BC, 37-BC, 38-BC, 39-BC, 40-BC, and 44-BC and extraction well ORBC-2, downgradient of ORBC-3 and monitoring wells 32-B, 32-C, 33-BC, 34-BC, upgradient of ORBC-3 which had been monitoring the effectiveness of the current pumping to intercept the plume near Edenvale Gap."

C. Provisions are amended to add the following tasks:

12. 1) COMPLETION DATE: April 1, 1988

TASK: **PROPOSED GROUNDWATER SELF MONITORING PLAN:** Submit a technical report acceptable to the Executive Officer which proposes revisions in the current Self Monitoring Plan to increase monitoring frequency in monitoring and water supply wells which may be significantly affected by the implementation of the short term remediation plan.

2) COMPLETION DATE: April 15, 1988

TASK: **SHORT TERM PLAN IMPLEMENTATION:** Submit a technical report acceptable to the Executive Officer documenting implementation of the short term remediation plan to minimize groundwater extraction.

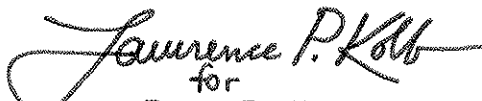
3) COMPLETION DATE: May 1, 1988

TASK: **PROPOSED FINAL REMEDIAL ACTION PLAN:** Submit a technical report acceptable to the Executive Officer which contains a proposal for a final remedial action plan which proposes final remediation levels and which includes an evaluation of an alternative for groundwater reuse. This technical report shall be a supplement to the draft comprehensive plan already submitted. This technical report shall be consistent with the California Water Code, the State Board Resolution No. 68-16, the State of California Health and Safety Code, the National Contingency Plan and shall be based on guidance found in the U.S. Environmental Protection Agency CERCLA guidance for RI/FS reports.

4) COMPLETION DATE: December 29, 1988

TASK: **GROUNDWATER EXTRACTION MINIMIZATION PLAN EFFECTIVENESS:** Submit a technical report acceptable to the Executive Officer which contains an evaluation of the effectiveness of the plan implementation described above in Task 1.

I, Roger B. James, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on March 16, 1988.


for
Roger B. James
Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

INTERNATIONAL BUSINESS MACHINES
GROUNDWATER SELF-MONITORING PROGRAM

ORDER NO. 88-045

A. GENERAL

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13268, 13383, and 13387(b) of the California Water Code and this Regional Board's Resolution No. 73-16.

The principal purposes of a waste discharger's monitoring program, also referred to as a self-monitoring program, are: (1) To document compliance with waste discharge requirements and prohibitions established by this Regional Board, (2) To facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from waste discharge, (3) To develop or assist in the development of effluent or other limitations, discharger prohibitions, national standards of performance, pretreatment and toxicity standards, and other standards, and (4) To prepare water and wastewater quality inventories.

B. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analyses shall be performed according to the EPA Method 8000 series described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", dated November 1986; or other methods approved and specified by the Executive Officer of this Regional Board.

C. REPORTS TO BE FILED WITH THE REGIONAL BOARD

1. Violations of Requirements

In the event the discharger is unable to comply with the conditions of the waste discharge requirements and prohibitions due to:

- a. maintenance work, power failures, or breakdown of waste treatment equipment, or
- b. accidents caused by human error or negligence, or
- c. other causes such as acts of nature, or
- d. poor operation or inadequate system design.

The discharger shall increase sample collection and analysis to weekly after three consecutive samples from compliance points near Edenvale Gap are found to contain more than 10 ppb of either 1,1,1-trichloroethane (TCA), Freon-113 or more than 0.5 ppb 1,1-dichloroethene (1,1-DCE). If chemical concentrations increase more than a calendar quarterly average of 10 ppb for each TCA and Freon 113 and 0.5 ppb 1,1-DCE in Edenvale Gap and peripheral

(lateral and vertical Boundary) wells, then the discharger shall notify the Regional Board office by telephone as soon as the discharger or the discharger's agent has knowledge of the incident. The discharger shall confirm this notification in writing within two weeks of the telephone notification. The written report shall include pertinent information explaining the reasons for noncompliance and shall indicate what steps were taken to prevent the problem from recurring.

The discharger shall file a written technical report at least 15 days prior to advertising for bid on any construction project which would cause or aggravate the discharge of waste in violation of requirements; said report shall describe the nature, costs and scheduling of all action necessary to preclude such discharge.

In addition, if the noncompliance caused by items (a), (b), (c) or (d) above is with respect to any of the order's limits, the waste discharger shall promptly accelerate the monitoring program to weekly or as required by the Board's Executive Officer for those constituents which have been violated. Such analysis shall continue until such time as the effluent limits have been attained, or until such time as the Executive Officer determines to be appropriate. The results of such monitoring shall be included in the regular Self-Monitoring Report.

2. Bypass Reports

Bypass reporting shall be an integral part of the regular monitoring program report. A report on bypassing of untreated units shall be made which will include cause, time and date, duration and estimated volume bypassed, method used in estimating volume, and persons and agencies notified. Notification to the Regional Board shall be made immediately by telephone (415-464-1255), followed by a written account within 15 days.

3. Self-Monitoring Reports

a. Reporting Period:

- (1). Written reports shall be filed regularly each quarter within forty-five days from the end of the quarter monitored.
- (2). A written report containing data for the compliance points specified in order 88-045 shall be submitted monthly within three weeks from the end of the month monitored.

b. Letter of Transmittal:

A letter transmitting self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period and actions taken or planned for correcting any requirement violation. If the discharger has previously submitted a

detailed time schedule for correcting requirement violations, a reference to this correspondence will be satisfactory. Monitoring reports and the letter transmitting reports shall be signed by either a principal executive officer or his duly authorized employee. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true and correct.

c. Data Results:

- (1). Results from each required analysis and observation shall be submitted in the quarterly self-monitoring regular reports. Results and Hazard Indices from compliance points listed in the Order shall also be submitted in the monthly report. All chromatographic peaks for purgeable halocarbons and/or volatile organics shall be identified and quantified in the quarterly and monthly regular reports, if a peak is identified in two consecutive samples. A GC/MS analysis shall be performed and all peaks identified and reported on each well according to Table 1 and on each new well immediately after installation and well development. Results shall also be submitted for any additional analyses performed by the dischargers at the specific request of the Board for parameters for which effluent limits have been established and provided to the dischargers by the Board.
- (2). The quarterly and, if noncompliance occurs, the monthly reports shall include a discussion of unexpected operational changes which could affect performance of the extraction system, such as flow fluctuations, maintenance shutdown, etc.
- (3). The quarterly report shall also identify the analytical procedures used for analyses either directly in the report or by reference to a standard plan accepted by the Executive Officer. Any special methods shall be identified and should have prior approval of the Board's Executive Officer.
- (4). IBM shall describe, in the quarterly SMR, the reasons for significant increases in a pollutant concentration at a well onsite. The description shall include:
 - 1). the source of the increase,
 - 2). how IBM determined or will investigate the source of the increase, and
 - 3). what source removal measures have been completed or will be proposed.

- (5). Original lab results shall be retained and shall be made available for inspection for three years after origination or until after all continuing or impending legal or administrative actions are resolved.
- (6). A map shall accompany the quarterly report, showing sampling locations and plume contours for each chemical in each aquifer.
- (7). IBM shall describe in the quarterly monitoring report the effectiveness of the actions taken to regain compliance if compliance is not achieved. The effectiveness evaluation shall include the basis of determining the effectiveness, water surface elevations for each well used to determine water surface elevation contours and water quality data.
- (8). The annual report shall be combined with the fourth quarter regular report and shall include cumulative data for the current year for each parameter of the attached Table 2. The annual report for December shall also include average Hazard Indices and minimum, maximum, median and average water quality data for the year.

d. SMP Revisions:

Additional long term or temporary changes in the sample collection frequency and routine chemical analysis may become warranted as monitoring needs change. These changes shall be based on the following criteria and shall be proposed in a quarterly SMR. The changes shall be implemented no earlier than 45 days after self-monitoring report is submitted for review or not at all if the proposal is found to be unacceptable.

Criteria for SMP revision:

- (1). Discontinued analysis for a routine chemical parameter for a specific well after a one-year period of below detection limit values for that parameter.
- (2). Changes in sampling frequency for a specific well after a one-year period of below detection limit values for all chemical parameters from that well.
- (3). Temporary increases in sampling frequency or changes in requested chemical parameters for a well or group of wells because of a change in data needs (e.g., evaluating groundwater extraction effectiveness or other remediation strategies).

D. DESCRIPTION OF SAMPLING STATIONS

Groundwater


<u>Stations</u>	<u>Description</u>
Listed in TABLE 1 and TABLE 2	Monitoring, observation, extraction, and water supply wells.

E. SCHEDULE OF SAMPLING AND ANALYSIS

The schedule of sampling and analysis shall be given in Table 1 and Table 2.

I, Roger B. James, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Regional Board's Resolution No. 73-16 in order to obtain data established in Regional Board Order No. 84-90 and Order No. 88-045 and State Board Order No. WQ 86-8.
2. Is effective on the date shown below.
3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the dischargers and revisions will be ordered by the Executive Officer.


Roger B. James
Executive Officer

Effective Date: JUNE 16, 1988

Attachments: Table 1
Table 2

Table 1. Sampling Schedule for GC/MS Analysis

Year 1

On-Site Wells

A-01, A-28, A-39, A-64, RA-2, RA-12, B-14, B-16, B-36, B-39, C-04

Off-Site Wells

1-B, 1-C, 1-DU, 1-DL, 9-B, 9-C, 9-D, 9-MD-186, 13-B, 13-C, 13-D,
15-B, 15-C, 33-BC, 38-BC, 38-D

Year 2

On-Site Wells

A-17, A-21, A-32, A-38, A-43, RA-14, B-04, B-11, B-21, B-42, C-1,
D-01

Off-Site Wells

8-CU, 8-CL, 18-B, 18-C, 19-BU, 19-BL, 19-C, 20-B, 20-C, 23-B,
23-C, 29-B, 29-C, 39-BC, 39-D

Year 3

On-Site Wells

A-11, A-13, A-20, A-41, A-71, A-72, B-02, B-22, B-23, B-41, C-11

Off-Site Wells

2-B, 2-C, 2-D, 5-B, 5-C, 7-BU, 7-BL, 7-C, 24-B, 24-C, 30-BC, 35-BC,
36-BCD, 46-BC, 47-D

Table 2. Chemical Analyses Schedule for Groundwater Samples

Well No.	Frequency	Fre 113	ICA	ICE	1,1-DCE	1,1-DCA	Chloro	Other
ON-SITE MONITORING WELLS								
A-1	Q	X	X	X	X		X	S.Sol 140, Benzene, Tol, Xyl, Cr, Cr+6
A-2	Q	X	X		X			
A-3	(dry)				X			
A-4	M	X	X	X				
A-5	(dry)							
A-6	--							Abandoned
A-7	(dry)							Abandoned
A-8	--							Abandoned
A-9	BM	X	X	X				S.Sol 140, Benzene, Tol, Xyl
A-10	Q	X	X	X				
A-11	Q	X	X	X	X	X	X	PCE
A-12	--							Redundant to A-61 (will not be sampled)
A-13	Q	X	X	X				
A-14	BM	X	X		X			Abandoned
A-15	--							
A-16	(dry)							
A-17	Q	X	X	X	X	X	X	1,2-DCE, PCE, Pet Nap, S.Sol 140, Benzene, Tol, Xyl
A-18	Q	X	X	X	X	X	X	PCE, S.Sol 140, Benzene, Tol, Xyl
A-19	(dry)							
A-20	M	X	X		X			
A-21	M	X	X		X			
A-22	(dry)							
A-23	(dry)							
A-24	(dry)							
A-25	SA	X	X		X			Redundant to A-25 (will not be sampled)
A-26	--							

Table 2. Chemical Analyses Schedule for Groundwater Samples (Continued)

Well No.	Frequency	Fre 113	ICA	ICE	1,1-DCE	1,1-DCA	Chloro	Other
A-27	(dry)							
A-28	BM	X	X	X	X	X	X	PCE, Chloro, S.Sol 140, Benzene, Tol, Xyl, Cr, Cr+6 Abandoned
A-29	--							
A-30	Q	X	X	X	X		X	
A-31	M	X	X	X			X	
A-32	Q	X	X		X		X	S.Sol 140, Benzene, Tol, Xyl, Cr, Cr+6
A-33	(dry)							
A-34	(dry)							
A-35	(dry)							
A-36	(dry)							
A-37	(dry)							
A-38	Q	X	X		X			S.Sol 140, Benzene, Tol, Xyl
A-39	Q	X	X	X	X	X	X	Cr, Cr+6
A-40	Q	X	X	X	X			S.Sol 140, Benzene, Tol, Xyl
A-41	Q	X	X	X	X	X	X	S.Sol 140, Benzene, Tol, Xyl, 1,2-DCE, PCE, EAK
A-42	(dry)							S.Sol 140, Benzene, Tol, Xyl
A-43	Q	X	X	X				S.Sol 140, Benzene, Tol, Xyl, 1,2-DCE, PCE, EAK
A-44	BM	X	X	X				S.Sol 140, Benzene, Tol, Xyl, 1,2-DCE, PCE
A-45	Q	X	X		X		X	S.Sol 140, Benzene, Tol, Xyl, 1,2-DCE, PCE
A-46	(dry)							S.Sol 140, Benzene, Tol, Xyl, 1,2-DCE, PCE
A-47	(dry)							S.Sol 140, Benzene, Tol, Xyl, 1,2-DCE, PCE
A-48	BM	X	X	X				S.Sol 140, Benzene, Tol, Xyl, 1,2-DCE, PCE
A-49	(dry)							
A-50	(dry)							
A-51	(dry)							
A-52	BM	X	X	X				
A-53	Q	X	X	X	X	X	X	PCE
A-54	BM	X	X	X				
A-55	BM	X	X	X				
A-56	BM	X	X	X				

Table 2. Chemical Analyses Schedule for Groundwater Samples (Continued)

Well No.	Frequency	Fre 113	ICA	ICE	1,1-DCE	1,1-DCA	Chloro	Other
A-57	BM	X	X	X				
A-58	(dry)							
A-59	(dry)							
A-60	(dry)							
A-61	Q	X	X	X	X		X	
A-62	--							Abandoned
A-63	Q	X	X	X				
A-64	Q	X	X	X				
A-65	Q	X	X	X				
A-66	BM	X	X	X				
A-68	(dry)							
A-69	Q	X	X	X				
A-70	Q	X	X	X				
A-71	BM	X	X	X	X		X	PCE, S.Sol 140, Benzene, Tol, Xyl, Cr, Cr+6
A-72	BM	X	X	X	X	X	X	PCE, S.Sol 140, Benzene, Tol, Xyl
A-73	Q	X	X					
A-74	(dry)							
A-75	Q	X	X		X			
A-76	(dry)							
B-1	--							Abandoned
B-2	M	X	X	X				
B-3	M	X	X	X				
B-4	M	X	X	X				
B-5	M	X	X	X			X	
B-6	Q	X	X	X				
B-7	SA	X	X		X			S.Sol 140, Benzene, Tol, Xyl
B-8	SA	X	X		X			
B-9	Q	X	X	X				
B-10	Q	X	X	X				
B-11	Q	X	X	X				
B-12	Q	X	X	X				
B-13	Q	X	X	X				

Table 2. Chemical Analyses Schedule for Groundwater Samples (Continued)

Well No.	Frequency	Fre 113	ICA	ICE	1,1-DCE	1,1-DCA	Chloro	Other
B-14	Q	X	X		X			
B-15	Q	X	X	X				
B-16	M	X	X	X	X			
B-17	BM	X	X	X				
B-18	M	X	X	X				
B-19	M	X	X	X				
B-20	BM	X	X	X				
B-21	Q	X	X	X	X			
B-22	Q	X	X	X	X			
B-23	SA	X	X	X				
B-24	(dry)							
B-25	SA	X	X		X			
B-26	(dry)							
B-27	(dry)							
B-28	Q	X	X		X			
B-29	Q	X	X		X			
B-30	Q	X	X	X				
B-31	Q	X	X	X				
B-32	M	X	X	X				
B-33	Q	X	X	X				
B-34	Q	X	X	X				
B-35	Q	X	X	X	X			
B-36	Q	X	X	X				
B-37	Q	X	X	X				
B-38	SA	X	X		X			
B-39	Q	X	X	X				S.Sol 140, Benzene, Tol, Xyl
B-40	Q	X	X	X	X			S.Sol 140, Benzene, Tol, Xyl
B-41	Q	X	X	X				
BC-07	BM	X	X		X			
BC-08	BM	X	X		X			
C-1	M	X	X		X			
C-2	M	X	X	X				
C-3	M	X	X	X				
C-4	Q	X	X	X				

Table 2. Chemical Analyses Schedule for Groundwater Samples (Continued)

Well No.	Frequency	Fre 113	ICA	ICE	1,1-DCE	1,1-DCA	Chloro	Other
C-5	BM	X	X	X				
C-6	BM	X	X	X				
C-7	M	X	X	X				
C-9	BM	X	X	X				
C-11	Q	X	X	X				
C-12	BM	X	X	X				
C-13	BM	X	X	X				
C-14	Q	X	X	X				
C-15	Q	X	X	X				
C-16	SA	X	X					
C-17	SA	X	X					
C-18	BM	X	X	X				
D-1	M	X	X	X				
D-2	M	X	X	X				
MD-1-299	M	X	X	X				
RA-1	M	X	X	X				
RA-4	(dry)							
RA-5	Q	X	X	X	X		X	Cr, Cr+6
RA-7	Q	X	X	X	X		X	Cr, Cr+6
RA-8	Q	X	X					MC
RA-9	Q	X	X	X			X	Cr, Cr+6
RA-11	Q	X	X	X	X		X	PCE
RA-12	Q	X	X	X	X		X	
RA-13	Q	X	X	X			X	
RA-14	M	X	X	X			X	
RA-15	Q	X	X	X	X	X	X	PCE
RA-16	BM							S.Sol 140, Benzene, Tol, Xyl
RA-17	BM							S.Sol 140, Benzene, Tol, Xyl
RA-18	BM							S.Sol 140, Benzene, Tol, Xyl
RA-19	BM							S.Sol 140, Benzene, Tol, Xyl
--	--							Redundant to 0-104 (will not be sampled)

Table 2. Chemical Analyses Schedule for Groundwater Samples (Continued)

Well No.	Frequency	Fre 113	TCA	TCE	1,1-DCE	1,1-DCA	Chloro	Other
RA-20	--							Redundant to O-101 (will not be sampled)
RA-21	BM							S.Sol 140, Benzene, Tol, Xyl
RB-1	Q	X	X	X	X			
RB-4	Q	X	X		X			
RB-5	Q	X	X		X			
RB-6	M	X	X	X	X			
RC-01	Q	X	X		X			
ON-SITE OBSERVATION WELLS								
O-12	BM							S.Sol 140, Benzene, Tol, Xyl
O-26	Q	X	X	X	X		X	
O-34	BM							S.Sol 140, Benzene, Tol, Xyl
O-100	BM							S.Sol 140, Benzene, Tol, Xyl
O-101	BM							S.Sol 140, Benzene, Tol, Xyl
O-102	BM							S.Sol 140, Benzene, Tol, Xyl
O-104	BM							S.Sol 140, Benzene, Tol, Xyl
O-105	BM							S.Sol 140, Benzene, Tol, Xyl
O-106	BM		X	X				S.Sol 140, Benzene, Tol, Xyl, PCE
O-107	BM							S.Sol 140, Benzene, Tol, Xyl
O-113	BM							S.Sol 140, Benzene, Tol, Xyl
O-114	BM							S.Sol 140, Benzene, Tol, Xyl
O-115	BM							S.Sol 140, Benzene, Tol, Xyl
O-116	BM							S.Sol 140, Benzene, Tol, Xyl
O-117	BM							S.Sol 140, Benzene, Tol, Xyl
O-118	BM	X	X	X	X		X	S.Sol 140, Benzene, Tol, Xyl PCE, Isoph , Cr, Cr+6

Table 2. Chemical Analyses Schedule for Groundwater Samples (Continued)

Well No.	Frequency	Fre 113	ICA	ICE	1,1-DCE	1,1-DCA	Chloro	Other
OFF-SITE OBSERVATION WELLS								
0-110	M							S.Sol 140, Benzene, Tol, Xyl
0-111	M							S.Sol 140, Benzene, Tol, Xyl
0-112	M							S.Sol 140, Benzene, Tol, Xyl
OFF-SITE MONITORING WELLS								
01-B	M	X	X	X	X	X		
01-C	M	X	X	X	X	X		
01-DU*	M	X	X					
01-DL	M	X	X	X	X	X		
02-A	Q	X	X					
02-B	M	X	X	X	X	X	X	
02-C	M	X	X	X	X	X		
02-D	M	X	X	X	X	X		
03-B	M	X	X	X	X	X		
03-C	M	X	X	X	X	X		
04-A	Q	X	X					
04-C	M	X	X					
05-A	Q	X	X					
05-B	M	X	X		X	X		
05-C	M	X	X		X	X		
06-B	M	X	X	X	X	X		
06-C	M	X	X	X	X	X		
07-A	Q	X	X					
07-BU	M	X	X	X	X	X		
07-BL	M	X	X	X	X	X		
07-C	M	X	X	X	X	X		
08-A	Q	X	X					
08-CU	M	X	X	X	X	X		
08-CL	M	X	X	X	X	X		
09-A	Q	X	X					

* Compliance point well

Table 2. Chemical Analyses Schedule for Groundwater Samples (Continued)

Well No.	Frequency	Fre 113	ICA	ICE	1,1-DCE	1,1-DCA	Chloro	Other
09-B	M	X	X		X	X		
09-C*	M	X	X		X	X		
09-D	BW	X	X		X	X		
09-MD-186*	BW	X	X	X	X	X		
10-A	Q	X	X		X	X		
10-B	M	X	X		X	X		
10-C	Q	X	X		X	X		
10-D	M	X	X	X	X	X		
11-BC	M	X	X		X	X		
12-A	M	X	X	X	X	X	X	
13-A	Q	X	X	X	X	X		
13-B	M	X	X		X	X		
13-C	M	X	X		X	X		
13-D	M	X	X		X	X		
14-B	Q	X	X		X	X		
14-C	Q	X	X		X	X		
15-B	M	X	X		X	X		
15-C	M	X	X		X	X		
16-B	Q	X	X		X	X		
16-C	Q	X	X		X	X		
17-B	Q	X	X		X	X		
17-C	Q	X	X		X	X		
18-B	M	X	X	X	X	X		
18-C	M	X	X	X	X	X		
19-BU	Q	X	X		X	X		
19-BL	M	X	X	X	X	X		
19-C	M	X	X	X	X	X		
20-B	M	X	X		X	X		
20-C	M	X	X		X	X		
21-C	Q	X	X		X	X		
22-B	Q	X	X		X	X		
22-C	Q	X	X		X	X		
23-A	Q	X	X	X		X		

* Compliance point well

Table 2. Chemical Analyses Schedule for Groundwater Samples (Continued)

Well No.	Frequency	Fre 113	ICA	ICE	1,1-DCE	1,1-DCA	Chloro	Other
23-B	M	X	X		X	X		
23-C	M	X	X		X	X		
24-B	M	X	X	X	X	X		
24-C	M	X	X		X	X		
25-B	Q	X	X		X	X		
25-C	Q	X	X		X	X		
26-B	Q	X	X		X	X		
26-C	Q	X	X		X	X		
27-B	Q	X	X		X	X		
27-C	Q	X	X		X	X		
28-B	Q	X	X		X	X		
28-C	Q	X	X		X	X		
29-B	M	X	X	X	X	X		Fre 12
29-C	M	X	X		X	X		
30-BC	M	X	X		X	X		
31-BC	Q	X	X		X	X		
32-B	BW	X	X		X	X		
32-C	BW	X	X		X	X		
33-BC	BW	X	X		X	X		
34-BC	BW	X	X		X	X		
35-BC	BW	X	X		X	X		
36-BCD*	BW	X	X		X	X		
37-BC	BW	X	X		X	X		
38-BC	BW	X	X		X	X		
38-D	M	X	X		X	X		
39-BC	BW	X	X		X	X		
39-D	M	X	X		X	X		
40-BC	BW	X	X		X	X		
41-B	M	X	X		X	X		
42-B	M	X	X	X	X	X	X	
43-MD-181	M	X	X	X		X		
44-BC	BW	X	X			X		
44-D	M	X	X			X		

* Compliance point well

Table 2. Chemical Analyses Schedule for Groundwater Samples (Continued)

Well No.	Frequency	Fre II3	ICA	ICE	1,1-DCE	1,1-DCA	Chloro	Other
45-BC	BW	X	X			X		
46-BC	BW	X	X			X		
47-D*	BW	X	X			X		
48-MD-260	M	X	X	X	X	X		
ORC-1	M	X	X	X	X	X		
ORBC-2	BW	X	X	X	X	X		
ON-SITE EXTRACTION WELLS								
RA-2	BW	X	X	X	X	X	X	1,2-DCE, PCE
RA-3	(dry)							
RA-6	(dry)							
RA-10	(dry)							
RB-2	BW	X	X	X	X	X	X	
RB-3	BW	X	X	X	X	X		
OFF-SITE EXTRACTION WELLS								
ORB-1	BW	X	X	X	X	X		
ORBC-3	BW	X	X	X	X	X		
PUBLIC/PRIVATE WELLS - REGION I, OFF-SITE								
03	M	X	X	X		X		
09	M	X	X			X		
35	M	X	X			X		
37	M	X	X			X		
57*	M	X	X			X		
58	M	X	X			X		
59*	M	X	X			X		
PUBLIC/PRIVATE WELLS - REGION II								
61	M	X	X			X		
62	M	X	X			X		

* If well owner provides access to well.

Table 2. Chemical Analyses Schedule for Groundwater Samples (Continued)

Well No.	Frequency	Fre 113	ICA	TCE	1,1-DCE	1,1-DCA	Chloro	Other
63	M	X	X			X		
64	M	X	X			X		
65	M	X	X			X		
69	M	X	X			X		
70	M	X	X			X		
71	M	X	X			X		
72	M	X	X			X		
73	M	X	X			X		
77	M	X	X			X		
78	M	X	X			X		
PRODUCTION WELLS (ON-SITE)								
W-3	M	X	X		X			S.Sol 140, Benzene, Tol, Xyl
W-4	M	X	X		X			S.Sol 140, Benzene, Tol, Xyl
W-5	M	X	X		X			S.Sol 140, Benzene, Tol, Xyl
W-6	M	X	X		X			S.Sol 140, Benzene, Tol, Xyl
W-7	M	X	X		X			S.Sol 140, Benzene, Tol, Xyl
W-8	M	X	X		X			
IRRIGATION WELLS (ON-SITE)								
1-009	--							Abandoned
Boyce	--							Abandoned
Chris	Q	X	X		X			
CH-H	Q	X	X		X			
Henley	Q	X	X		X			
Felice	Q	X	X		X			
Lodge	--							Abandoned
Mabee	Q	X	X		X			
NBoyce	Q	X	X		X			
Rubino	Q	X	X		X			
Swick	Q	X	X		X			
Waltc	--							Abandoned
Yosh	Q	X	X		X			

EXPLANATION FOR TABLE 2

1. Abbreviations for frequencies are:

W	Weekly
BW	Biweekly (every 2 weeks)
BM	Bimonthly (every 2 months)
M	Monthly
Q	Quarterly
SA	Semiannually (2 times per year)
Dry	Well cannot be sampled due to low water level

2. Abbreviations for chemicals are:

<u>Abbreviation</u>	<u>Chemical</u>
Fre 113	Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)
TCA	1,1,1-trichloroethane
TCE	Trichloroethylene
1,1-DCE	1,1-dichloroethylene
1,1-DCA	1,1-dichloroethane
Chloro	Chloroform
1,2-DCE	1,2-dichloroethylene
PCE	Perchloroethylene
Pet Nap	Petroleum Naphtha
S.Sol 140	Shell Sol 140
Tol	Toluene
Xyl	Xylenes
EAK	Ethyl Amyl Ketone
MC	Methylene Chloride
Isoph	Isophorone
Cr	Chromium
Cr+6	Hexavalent chromium

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

ORDER NO. 88-046

AN ORDER AMENDING ORDER NO. 87-16

SITE CLEANUP REQUIREMENTS FOR:

FAIRCHILD SEMICONDUCTOR CORPORATION
SAN JOSE
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board), finds that:

1. On March 18, 1987, the Board adopted Order No. 87-16 prescribing site cleanup requirements for Fairchild Semiconductor Corporation (hereinafter called the discharger).
2. The discharger has been extracting groundwater from the Santa Teresa Basin as part of its interim remediation program since January 1982. Groundwater extraction reached a maximum in February 1984 at a rate of 14,870 acre-feet per year (9217 gpm). As of December 1987, the discharger was extracting groundwater at a rate of 3445 acre-feet per year (2135 gpm) from the B- and C-aquifers, of which 1200 acre-feet per year (745 gpm) was from the C-aquifer extraction system.
3. Operation of the extraction wells has brought the plume under hydraulic control, significantly reduced the size of the plume, and significantly reduced solvent concentrations within the plume. As a result of interim cleanup, groundwater in Great Oaks Well GO-4, a drinking water supply well located downgradient from the site, has remained free of detectable concentrations of volatile organic chemicals.
4. In September 1987, the discharger submitted a draft comprehensive remedial action plan as required by Board Order 87-16. This comprehensive plan contains an evaluation of remediation alternatives, proposed remediation levels, a proposed final remediation plan, and a public health evaluation. Regional Board and other agency staff reviewed the draft plan in November 1987. A revised remedial action plan is scheduled to be submitted by March 31, 1988. Regional Board staff anticipate that the revised remedial action plan will be available for public review and comment this summer and a final cleanup order will be brought before the Board near the end of this year.

5. The discharger reports in their remedial action plan that the piezometric head in the off-site B-aquifer has dropped between 20 to 38 feet below its April 1982 level. Piezometric head in the C-aquifer is approximately 45 feet below its April 1982 levels. Factors contributing to the decreases in piezometric head include the extraction of polluted groundwater, last year's low rainfall, reduced active recharge efficiency, and increased groundwater extraction for water supply purposes. A short term water conservation plan is necessary to accommodate changing water conditions as addressed in this Order. Implementation of this short term plan requires amendment of Order No. 87-16.
6. Groundwater elevations have declined throughout the Santa Teresa Basin since 1981. To the extent that groundwater extraction by the discharger contributes to the decline in groundwater elevations throughout the basin, continued extraction by the discharger may adversely affect groundwater cleanups in the basin.
7. The Santa Clara Valley Water District (hereinafter called the Water District) is concerned that declining water levels will adversely affect overall water supply in the basin. The Water District has coordinated a Santa Teresa Basin Management Task Force consisting of all the major groundwater users in the Santa Teresa Basin. The discharger participated in this Task Force. In conjunction with the groundwater users, the Water District developed a Santa Teresa Basin Management Plan in January 1988 that has a goal of reducing basin wide overdraft by about 9500 acre-feet per year (5890 gpm) during the next few water-critical years by a combination of additional Water District recharge and significant reduction in extraction by the groundwater users. In developing this plan, the Water District considered groundwater conservation plans prepared voluntarily by the major groundwater users in the Basin. The discharger has reduced their groundwater extraction rate by 85 percent since February 1984 and did not prepare a groundwater conservation plan to achieve additional reductions in pumpage.
8. Historically, the discharger has detected 1,1,1-trichloroethane (TCA), 1,1-dichloroethylene (DCE), and Freon 113 in the C-aquifer. Currently, TCA is the only pollutant detected in the C-aquifer. Typical TCA concentrations in the C-aquifer are between 2 and 3 ppb, which is between 1 and 1-1/2 percent of the Department of Health Service's action level (SAL) and which is also between 1 and 1-1/2 percent of the Safe Drinking Water Act's maximum contaminant level goal (MCLG). All TCA concentrations in the C-aquifer have been below 5 ppb since August 1987.

9. Great Oaks Well GO-4 extracts groundwater from both the B- and C-aquifers. If the discharger eliminated the extraction of groundwater in the C-aquifer, pollutants would migrate toward this well. If detectable levels of pollutants should reach GO-4, the maximum concentrations detected would be expected to measure less than 5 ppb.
10. Considering the groundwater overdraft in the Santa Teresa Basin and that typical concentrations of pollutants currently in the C-aquifer are between 2 and 3 ppb, the elimination of groundwater extraction in the C-aquifer by the discharger will conserve groundwater resources without allowing the significant migration of pollutants.
11. Implementation of a short term water conservation plan is consistent with State Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in the State of California." This short term water conservation plan will allow limited degradation of the quality of groundwater without affecting beneficial uses, is consistent with maximum benefits to the People of the State by conserving groundwater meeting SAL and MCLG, and does not prevent implementation of a final remediation plan.
12. This action is an order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of CEQA pursuant to Section 15321 of the Resources Agency Guidelines.
13. The Board has notified the discharger and all interested agencies and persons of its intent under California Water Code Section 13304 to amend Order 87-16 and prescribe Site Cleanup Requirements for the discharger and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
14. The Board, at a public meeting, heard and considered all comments pertaining to these discharges.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code that the discharger shall cleanup and abate the effects described in the above findings and that this Board's Order No. 87-16 is amended as follows:

A. Prohibition A.2 is amended as follows:

"Further significant migration of pollutants through subsurface transport to waters of the State is prohibited. Significant migration of pollutants in the C-aquifer is

defined as migration of TCA at concentrations equal to or greater than 5 ppb as measured wells 107(C), RW-10(C), and 102(C)."

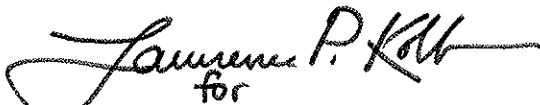
B. The Provisions are amended by adding the following tasks:

"2. C. OFF SITE

"a) COMPLETION DATE: April 15, 1988

"TASK: Submit a technical report acceptable to the Executive Officer containing a proposal to eliminate or reduce groundwater extraction in the C-aquifer, an implementation time schedule, and a self monitoring plan. The technical report shall contain a monitoring program sufficient to detect changes in groundwater elevations and chemical concentrations for a minimum of six months after implementation of the proposal. The technical report shall also contain a contingency plan addressing measures that would be implemented to assure that TCA concentrations equal to or greater than 5 ppb are not detected in the C-aquifer.

I, Roger B. James, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on March 16, 1988.


for

ROGER B. JAMES
Executive Officer